

Title (en)

Wooden spool held together with novel tie rod assembly and method of assembling the same between a pair of dies

Title (de)

Mittels Zugankern zusammengehaltene Holzspule sowie Verfahren zu seinem Zusammenbau zwischen zwei Matrizen

Title (fr)

Bobine en bois tenu ensemble au moyen d'un ensemble de tirants et procédé pour son assemblage entre deux matrices

Publication

**EP 1176111 A3 20020814 (EN)**

Application

**EP 01202005 A 20010528**

Priority

US 58666700 A 20000601

Abstract (en)

[origin: EP1176111A2] The novel tie rod assembly (32) includes elongate tie rods (34) having a bent end (40) or otherwise deformed first end and a plurality of grooveless retaining rings (36). The tie rods (34) are inserted through the end flanges (12) and the transverse barrel (14) of the of the spool. The retaining rings (36) are pressed axially on the smooth second ends of the tie rods (34) which project axially from one of the flanges (12). The spool can be assembled between a pair of dies. The base die includes locating recesses to receive the bent ends of the tie rods and the top die includes engaging pins for pressing the retaining rings on the opposite ends of the spool. <IMAGE>

IPC 1-7

**B65H 75/14**

IPC 8 full level

**B65H 75/14** (2006.01)

CPC (source: EP US)

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Citation (search report)

- [E] DE 10016561 A1 20011004 - SCHUTE ANDREAS [DE]
- [X] US 3036793 A 19620529 - BECKER PHILIP D
- [X] GB 356907 A 19310917 - THOMAS HENRY TWEEDLE, et al
- [X] US 4077104 A 19780307 - MILLER ROBERT M
- [X] US 2354375 A 19440725 - HOWSAM HILYARD C
- [A] US 2856137 A 19581014 - HOWSAM HILYARD C
- [A] US 5897075 A 19990427 - ELDER JACK E [US], et al
- [A] US 2741442 A 19560410 - WILLIAM AUPPERLE

Cited by

DE10232897A1; DE10232897B4; CN102935964A

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